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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* HUGO CHEUNG, LU YUAN, and RAMESH SARIPALLI

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Appeal 2008-0271  
Application 10/712,736  
Technology Center 2100

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Decided: April 23, 2008

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Before JOSEPH L. DIXON, JEAN R. HOMERE, and STEPHEN C. SIU,  
*Administrative Patent Judges.*

SIU, *Administrative Patent Judge.*

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 7-11. Claim 12 has been cancelled. Claims 1-6 and 13-20 have been withdrawn. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

#### A. INVENTION

The invention at issue involves using a serial peripheral interface (SPI) for achieving a higher serial transmit and receive data rates (Spec. 3). In particular, an SPI includes a direct memory access (DMA) that performs cycle stealing techniques to prevent conflicts between SPI memory traffic and other memory accesses (*id.*).

#### B. ILLUSTRATIVE CLAIM

Claim 7, which further illustrates the invention, follows:

7. A serial peripheral interface (SPI) for use with a microcontroller and configured for increasing the rate of data communications, wherein the SPI module comprises:

- a plurality of hardware pointers to memory locations in a FIFO buffer;
- at least one hardware pointer counter; and

- a hardware logic device; wherein the hardware logic device is configured to communicate with a bus interface and to utilize the FIFO buffer for intermediate storage of data being transmitted from and received to the CPU,

wherein the SPI is further configured to communicate with a DMA module and the bus interface for providing cycle stealing.

#### C. REJECTIONS

Claims 7-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,816,996 (“Hill”) and U.S. Patent No. 5,047,927 (“Sowell”).

## II. CLAIM GROUPING

1 “When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately.” 37 C.F.R. § 41.37(c)(1)(vii) (2005).<sup>1</sup>

Appellants argue claims 7-11 as a group (Second Subst. App. Br. 4).<sup>2</sup> We select claim 7 as the sole claim on which to decide the appeal of the group.

## III. ANALYSIS

The Examiner finds that “Hill discloses the SPI for transfer of data” (Ans. 4) and “Sowell teaches using DMA cycle stealing mode” (*id.*). Based on these findings, the Examiner concludes “that the combination of Hill and Sowell teaches all the limitations of the claims” (*id.* 4-5).

Appellants argue that “Hill does not disclose the SPI for providing cycle stealing” (Second Subst. App. Br. 4) and that Sowell, while disclosing

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<sup>1</sup> We cite to the version of the Code of Federal Regulations in effect at the time of the Appeal Brief. The current version includes the same rules.

<sup>2</sup> We rely on and refer to the Second Substitute Appeal Brief filed October, 2, 2006 because prior filed Appeal Briefs were defective.

a DMA that is used in “cycle stealing mode,” fails to disclose “a SPI having cycle stealing” (*id.* 4). Thus, Appellants assert that Hill, while disclosing an SPI, fails to disclose cycle stealing and that Sowell, while disclosing cycle stealing, fails to disclose the SPI. While Appellants assert that each of Hill and Sowell fail to individually disclose each element of claim 7, Appellants nevertheless fail to demonstrate, much less assert, that the combination of Hill and Sowell fails to disclose all the features of claim 7. Because the Examiner relies on the combination of teachings of Hill and Sowell, rather than on each of Hill and Sowell taken separately and in isolation, we find that Appellants have failed to demonstrate Examiner error. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413 (Fed. Cir. 1986).

Hill discloses “data communications between components of data processing systems” using a Serial Peripheral Interface (SPI) (col. 1, ll. 18-23). Hill also discloses that a “primary drawback of the SPI interface . . . is that it requires . . . a high degree of intervention from the controller of the master device (typically the . . . CPU . . .)” (col. 1, ll. 57-59). Sowell discloses that a “direct memory access (DMA) provides a fast means for retrieving and placing data” (col. 3, ll. 6-7). Although “traditional DMA controllers interrupt the CPU after each message is placed” (col. 4, ll. 32-33), the “DMA is generally used in a ‘cycle stealing mode’ which provides an efficient means of data movement” (col. 3, ll. 8-10). Thus, Sowell

demonstrates that an efficient means of data movement using a DMA to provide for cycle stealing was known to those of skill in the art at the time the invention was made. The use of the DMA in Sowell to provide cycle stealing would have been obvious because the combination of the DMA of Sowell with the SPI of Hill would have entailed the rearrangement of known elements to result in no more than predictable, expected results of increased efficiency in data movement. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results . . . [W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739-40 (2007).

Therefore, we affirm the rejection of claim 7 and of claims 8-11, which fall therewith.

#### IV. ORDER

In summary, we affirm the Examiner’s decision to reject claims 7-11 under § 103(a).

Appeal 2008-0271  
Application 10/712,736

No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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